

09/609,110

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(FILE 'HOME' ENTERED AT 07:45:47 ON 14 MAR 2002)

FILE 'CA' ENTERED AT 07:46:27 ON 14 MAR 2002

E JACOB MICHAEL/IN  
L1 8 S E3-E4  
E RUMPLER KARLHEINZ/IN  
L2 1 S E3  
L3 2 S FLUID?(P)BED(P)HORIZONTAL?(P)EXPANSION(3W)ZONE#(P)(AIR OR  
GAS  
L4 2 S FLUID?(P)BED(P)HORIZONTAL? AND EXPANSION(3W)ZONE#  
L5 0 S L4 NOT L3  
L6 1271 S FLUID?(P)BED(P)HORIZONTAL?  
L7 332085 S (REDUC#### OR DECREAS####) (P) (AIR OR GAS?)  
L8 162161 S EXPANSION  
L9 150 S L6 AND L7  
L10 6 S L8 AND L9  
L11 5 S L10 NOT L3  
L12 1103 S EXPANSION(3W) (ZONE# OR AREA# OR PORTION# OR SPACE#)  
L13 3 S L6 AND L12

FILE 'USPATFULL' ENTERED AT 08:43:29 ON 14 MAR 2002

L14 1750 S L9  
L15 44 S L14 AND L12  
L16 1797 S DUST?(P)FILTER?(P)(RETURN? OR RECYCL? OR REGENERAT?)  
L17 0 S L15 AND L16  
L18 31 S L14 AND L16  
L19 4011 S (DUST? OR FINE#) (P)FILTER?(P)(RETURN? OR RECYCL? OR  
REGENERAT  
L20 61 S L14 AND L19  
L21 30 S L20 NOT L18  
L22 2 S FLUID?(P)BED AND L7 AND L12 AND L19  
L23 53 S L13  
L24 482947 S (REDUC? OR DECREAS? OR ADJUST?) (P) (AIR OR GAS?)  
L25 45 S L23 AND L24  
L26 0 S L25 AND L19  
L27 180267 S DETERGENT# OR DETERSIVE# OR SURFACTANT# OR SURFACE ACTIVE  
OR  
L28 0 S L25 AND L27

=>

L1 8 ("JACOB MICHAEL"/IN OR "JACOB MICHEL"/IN)

=> d 1-8 11 ti

L1 ANSWER 1 OF 8 CA COPYRIGHT 2002 ACS

TI Manufacture of granulated or agglomerated heavy duty detergent compositions

L1 ANSWER 2 OF 8 CA COPYRIGHT 2002 ACS

TI Method for producing a nanotubular carbon material, and the material produced thereby

L1 ANSWER 3 OF 8 CA COPYRIGHT 2002 ACS

TI Method for producing a non-volatile semiconductor memory cell

L1 ANSWER 4 OF 8 CA COPYRIGHT 2002 ACS

TI Manufacture of granulated mixed fertilizer

L1 ANSWER 5 OF 8 CA COPYRIGHT 2002 ACS

TI Producing melt suspensions, emulsions, or solutions for the manufacture of granular fertilizer mixtures

L1 ANSWER 6 OF 8 CA COPYRIGHT 2002 ACS

TI Fluidized-bed apparatus for treating dispersed materials and solids-containing liquids

L1 ANSWER 7 OF 8 CA COPYRIGHT 2002 ACS

TI Cast iron-nickel alloy for press bending of glass panels

L1 ANSWER 8 OF 8 CA COPYRIGHT 2002 ACS

TI Protection of steel against corrosive gases, especially fluorides

=>

L1 ANSWER 6 OF 8 CA COPYRIGHT 2002 ACS

AN 129:124178 CA

TI Fluidized-bed apparatus for treating dispersed materials and solids-containing liquids

IN **Jacob, Michael**; Wessel, Axel; Ruempler, Karlheinz

PA Glatt Ingenieurtechnik G.m.b.H., Germany

SO Ger. Offen., 6 pp.

CODEN: GWXXBX

DT Patent

LA German

IC ICM B01J008-24

ICS B01J002-16; B01J008-44; F26B003-08

CC 47-4 (Apparatus and Plant Equipment)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	DE 19700029	A1	19980709	DE 1997-19700029	19970102
AB	The app. contains an openings-contg. flow-in bottom and is divided with obstructions into stages. For controlling the material properties of the end products with respect to the moisture content, grain size, and grain edges, the opening ratio of the free surface:the total surface of the flow-in bottom increases in the direction of the material transport. The obstructions are arranged in such a way to form a gap between them and the flow-in such, and the velocity and amt. of the fluidizing medium supplied to the flow-in such is controlled by the arrangement of fans, dampers, etc.				
ST	fluidized bed app treatment dispersed material; solids contg liq treatment				
	fluidized bed				
IT	Disperse systems				
	Suspensions				
	(fluidized-bed app. for treating)				
IT	Fluidized beds				
	(for treating dispersed materials and solids-contg. liqs.)				

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L2 ANSWER 1 OF 1 CA COPYRIGHT 2002 ACS

AN 135:182417 CA

TI Manufacture of granulated or agglomerated heavy duty detergent compositions

IN Jacob, Michael; **Rumpler, Karlheinz**

PA Glatt Ingenieurtechnik GmbH, Germany

SO Eur. Pat. Appl., 7 pp.

CODEN: EPXXDW

DT Patent

LA German

IC ICM C11D011-00

ICS C11D011-02

CC 46-6 (Surface Active Agents and Detergents)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	EP 1126017	A1	20010822	EP 2000-103515	20000218
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
AB	Solid detergent compn. with improved mech. strength, low dust content and particle size 0.2-2.00 mm is manufd. by use of a fluidized bed process in which the solid components are sprayed with binder solns., suspensions or melts (no examples). The dust particles carried with the process air are captured by passing through an expansion zone and an attached filter and returned to the agglomeration zone. A process flow diagram is included.				
ST	detergent heavy duty granulate manuf fluidized bed process; fluidized bed binder spraying drying detergent granulate manuf				
IT	Granulation				
	(fluidized-bed, drying; manuf. of granulated or agglomerated heavy duty				
	detergent compns.)				
IT	Drying				
	(fluidized-bed, granulation; manuf. of granulated or agglomerated heavy				
	duty detergent compns.)				
IT	Detergents				
	(granular, heavy duty; manuf. of granulated or agglomerated heavy duty detergent compns.)				

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Danish Oil Mills Ltd; GB 1341557 A 1973 CA

(2) Henkel Kgaa; DE 4304015 A 1994 CA

(3) Henkel Kgaa; DE 4422607 A 1996 CA

(4) Henkel Kgaa; DE 19750424 A 1999

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L3 ANSWER 1 OF 2 CA COPYRIGHT 2002 ACS  
 AN 132:166781 CA  
 TI Reactor for continuous gas phase polymerization in horizontal fluidized bed for use with high-yield catalysts  
 IN Mattos de Lemos, Paulo; Jardim Zacca, Jorge  
 PA Opp Petroquimica S.A., Brazil  
 SO Braz. Pedido PI, 37 pp.  
 CODEN: BPXXDX  
 DT Patent  
 LA Portuguese  
 IC ICM C08F002-34  
 CC 35-9 (Chemistry of Synthetic High Polymers)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	BR 9704926	A	19990511	BR 1997-4926	19970930

AB The app. consists of a **horizontal** block having an **expansion zone** above the **fluidized bed**, which in turn comprises a disengagement zone and solid particle collection zone; the **fluidized bed** which consists of three chambers sepd. from the plenum chambers; and the **gas** circulation loop integrated to heat exchangers, compressors, and **gas** reservoirs. The height of the **fluidized bed** is one tenth to one half that of vertical **fluidized bed** reactors and the app. is designed to produce polymers from .alpha.-olefins, polar vinyl monomers, dienes, acetylenes, and aldehydes in **gas** mixts. Each **fluidizing** zone can operate with a sep. **gas** feed mixt. and temp. and the **bed** is set at an angle that depends on the d. and adherence of the polymer being produced and that allows for wt.-driven flow of polymer particles through each zone. A low-d. copolymer of 1-butene and ethylene was prepd. using a transition metal catalyst, MAO activator, an electron donor, was produced in the reactor using a **fluidized bed** 3-zone configuration. The yield of polymer and productivity increased with the no. of **fluidization** zones.

ST fluidized bed horizontal block polymn reactor; gas phase continuous polymn reactor; ethylene butene polymn fluidized bed transition metal catalyst

IT Aluminoxanes  
 RL: CAT (Catalyst use); USES (Uses)  
 (Me; variable zone fluidized bed horizontal reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT Reactors  
 (fluidized-bed; variable zone fluidized bed horizontal reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT Fluidized beds  
 (reactors; variable zone fluidized bed horizontal reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT Heat exchangers  
 Polymerization apparatus  
 (variable zone fluidized bed horizontal reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT Transition metals, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (variable zone fluidized bed horizontal reactor for continuous gas

phase polymn. of olefins and vinyl monomers with high-yield catalysts)  
IT 9010-79-1P, Ethylene-propylene copolymer 25087-34-7P, 1-Butene-ethylene  
copolymer

RL: IMF (Industrial manufacture); PREP (Preparation)

(variable zone fluidized bed horizontal reactor for continuous gas  
phase polymn. of olefins and vinyl monomers with high-yield catalysts)

=>

=> d 2 13 all

L3 ANSWER 2 OF 2 CA COPYRIGHT 2002 ACS

AN 118:150186 CA

TI Modeling of linear **expansion zone** of a  
**horizontal gas jet in fluidized bed**  
of large particles

AU Xuereb, C.; Laguerie, C.; Avaro, M.; Baron, T.

CS ENSIGC, CNRS, Toulouse, Fr.

SO Recents Prog. Genie Procedes (1991), 5(11, Fluidisation), 130-7  
CODEN: RPGPEX

DT Journal

LA French

CC 48-7 (Unit Operations and Processes)

AB A math. model based on the general equations of mass and momentum  
conservation was developed to describe the flow properties of a gas jet  
introduced horizontally into a fluidized bed with coarse particles. The  
effects of the main phys. and operating parameters on the jet

development,

as well as on the entrainment of solid particles and the formation of  
local reduced-pressure areas, were easily detd. by computer processing of  
data. Good agreement between exptl. data and model predictions was

found.

ST flow jet fluidized bed; mass transfer jet fluidization; coarse particle  
jet fluidization

IT Mass transfer

(in fluidization of coarse particles in presence of horizontal gas

jet)

IT Fluidization

(of coarse particles, introduction and expansion of horizontal gas jet  
in)

IT Flow

(jet, horizontal, in fluidization of coarse particles, model of)

=>

=> d 1-5 l11 ti

L11 ANSWER 1 OF 5 CA COPYRIGHT 2002 ACS

TI Prediction of the particle flow conditions in the freeboard of a freely  
bubbling fluidized bed

L11 ANSWER 2 OF 5 CA COPYRIGHT 2002 ACS

TI Hydration enhanced sulfation of limestone and dolomite in the  
fluidized-bed combustion of coal

L11 ANSWER 3 OF 5 CA COPYRIGHT 2002 ACS

TI Fluidized beds with internal screens. I. Study of a two-dimensional bed

L11 ANSWER 4 OF 5 CA COPYRIGHT 2002 ACS

TI Process for the treatment of fluids

L11 ANSWER 5 OF 5 CA COPYRIGHT 2002 ACS

TI Motion and mixing of solid particles in a fluidized bed

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=> d 1-5 l11 hit

L11 ANSWER 1 OF 5 CA COPYRIGHT 2002 ACS

AB The d. and flux of particles in the freeboard of a freely bubbling **fluidized bed** is a function of the size, aspect ratio and frequency of bubbles erupting at the surface of the dense **bed**. To predict the velocity and amt. of material thrown into the freeboard,

a previous model for the eruption of a single bubble T. W. Yule and L. R. Glicksman (1989) was reformulated to deal with the eruption of a multiple bubbles undergoing coalescence at the **bed** surface. The soln. includes the explicit mechanics of particle elements in the nose of the leading bubble as well as the particle elements in the wakes of bubbles trapped between coalescing bubbles. The motive force for the particle acceleration is the excess **gas** flow through the cavity at the **bed** surface. The **gas** flow, in turn is found from a numerical soln. spanning the **bed** from the upper surface to the distributor. The solns. for a single erupting bubble, two vertically aligned bubbles, and three vertically aligned bubbles were obtained numerically. The predicted vertical mass flux of particles **decreases** exponentially with height. The smooth fall off of the predicted flux with height above the **bed** is due to the consideration of sep. particle elements which have different initial conditions at different points around the nose of the bubble. The soln. for the erupting single sphere agrees with the measurements of S. E. George and J. R. Grace (1978). For a freely bubbling **bed**, the frequency of bubble eruptions and the probability of coalescence at the **bed** surface can be obtained from a statistical model of the bubbling process which has been used before to predict accurately the **expansion** of bubbling beds of L. R. Glicksman et al. (1991). Combining the statistical model with the predictions for single eruptions results in a prediction of the flux and d. distributions in the

freeboard.

Measured d. distributions above a freely bubbling **bed**, contg. **horizontal** tubes, are in general agreement with the model predictions. The distributions are found to be primarily controlled by the bubble size at the **bed** surface, the vol. fraction of bubbles in the **bed** and the excess **gas** velocity. The predicted exponential coeff. for d. and mass flux is consistent with the

correlation

of exptl. results given by D. Kunii and O. Levenspiel (1990).

L11 ANSWER 2 OF 5 CA COPYRIGHT 2002 ACS

AB In the removal of SO<sub>2</sub> by dolomite or limestone sorbents in **fluidized-bed** coal combustion, hydration of residual CaO in the partially sulfated sorbents is a promising technique for increasing

Ca utilization by increasing the SO<sub>2</sub>-removal capacity of the sorbents. The technique is applicable to a variety of limestones and dolomite but is more effective on stones with less initial Ca conversion. The effectiveness of hydration is related to the change in pore-size distribution caused by **expansion** of particles by the formation of Ca(OH)<sub>2</sub> and by formation of new porosity by dehydration of Ca(OH)<sub>2</sub> and recrystn. of CaO. Limestones and dolomites were sulfated under a simulated flue **gas** contg. SO<sub>2</sub> 0.3, O<sub>2</sub> 5, CO<sub>2</sub> 20% and the balance N in **horizontal** tube furnaces. The resultant spent sorbent was sprayed with H<sub>2</sub>O to hydrate all available CaO, heated to 850.degree. to det. the H<sub>2</sub>O content by wt. loss, dried, precalcined, and resulfated.

Expts. done in an atm. **fluidized bed** combustor are described. The increased Ca utilization, as shown in the tube furnace expts. and verified in PDU (process-development unit)-scale combustor expts., **reduces** the amt. of limestone required to **reduce** SO<sub>2</sub> levels in **fluidized bed** combustor off-gas to EPA emission stds. The amt. of solid waste produced and the costs assocd. with managing the environmental impacts are also **reduced**

L11 ANSWER 3 OF 5 CA COPYRIGHT 2002 ACS

AB The elimination of bubbles from **fluidized** beds by screens was studied. The screens consisted of sets of **horizontal**, 12-mm-diam. tubes with center-to-center spacing 2, 4, or 6 cm. The no. of sets was 1, 2, and 3, the height above the distributor was 17-60 cm, and the difference between the heights of the 1st and 2nd and the 2nd and 3rd sets was 5-20 and 5-15 cm. The **gas** distributors were a screen, a perforated plate, and a sintered, porous plate. Data on the min. and complete **fluidization** velocities, the bubble-size distribution, and the **bed expansion** are presented. The efficiency of bubble-size **decrease** by a screen is discussed.

IT Bubbles  
(in **fluidized bed**, break up of, by screens of **horizontal** cylinders)

L11 ANSWER 4 OF 5 CA COPYRIGHT 2002 ACS

AB A device is presented for holding filtration, ion exchange, or other solid

materials through which **fluids** are to be passed. The device consists of a rigid casing contg. a flexible casing in which the filter material is placed. The top and bottom of the flexible casing is enclosed by a pervious material to permit **fluid** flow and the inner flexible casing is sealed at the top and bottom to the outer rigid casing to provide a space between the containers into which liquids or **gases** under pressure may be admitted to apply a **horizontal** pressure to the filter material. This **horizontal** pressure may be adjusted to prevent channel formation or **bed** disruption during regenerative back-wash or to permit lateral **expansion** of the filter media as a result of swelling. A variable chamber vol. in the inner flexible casing may be used to allow for vertical **expansion** of the filter media. In an application of the app. to the softening of water by a cation-exchange resin, a total **bed** vol. of 420 l. was placed in a 1100-mm. layer in the flexible casing allowing an upper **expansion** height of 900 mm. The top and bottom of the flexible casing were closed with plastic disks contg. 4 mm. holes permitting passage of the water but preventing passage of the exchange resin. Water being softened was passed through in a downward direction. For regeneration of the spent exchanger, the flexible wall of the inner casing

was compressed such that the **expansion** space was completely eliminated and NaCl soln. followed by tap water was passed through the **bed** in an upward direction. The casing was then expanded, the filter again rinsed in a downward direction and the exchanger was ready for use. A significant **decrease** in the amt. of regenerant soln. is claimed relative to that used when regenerant soln. is passed through in a downward direction.

L11 ANSWER 5 OF 5 CA COPYRIGHT 2002 ACS

AB The fluctuating velocities of solid particles in a **fluidized bed** were measured by a spherical probe, rigidly connected to a **horizontal** spring. Collisions of particles with the sphere are recorded by 2 strain gages attached to the spring. The frequency of fluctuations was in the range of 5-30 cycles. The velocity  $u$  reached a max. and then **decreased** with increasing **fluidizing gas** velocities  $w$  and **bed expansion** factor  $(1 - \epsilon)$ , its magnitude being lower for polydisperse particles than for homogeneous ones. The effective diffusion coeff., found from the distribution of  $K_2Cr_2O_7$  particles in sand and magnetite in barite,  $D^* \approx 0.1 \text{ ul}$ , where  $l$  is the scale of the fluctuations. The effective cond., calcd. from heat transfer from a coaxially installed cylindrical heating element to an annular cooling jacket, is  $\lambda^* \approx 10^{-2} \text{ ulcm} (1 - \epsilon)$ , where  $cm$  is sp. heat of solids.  $\lambda^* = 30-170$  for homogeneous, and  $\approx 10 \text{ kcal./m. hr. } ^\circ C.$  for polydisperse systems. The effective viscosity, measured by a perforated rotor viscometer, is  $\mu^* \approx 10^{-2} \text{ ulpm} (1 - \epsilon)$ . For small **bed** columns  $l \approx R$ , where  $R$  is the column radius.

=>

=> d 1-3 113 hit

L13 ANSWER 1 OF 3 CA COPYRIGHT 2002 ACS

TI Reactor for continuous gas phase polymerization in **horizontal fluidized bed** for use with high-yield catalysts

AB The app. consists of a **horizontal** block having an **expansion zone** above the **fluidized bed**, which in turn comprises a disengagement zone and solid particle collection zone; the **fluidized bed** which consists of three chambers sepd. from the plenum chambers; and the gas circulation loop integrated to heat exchangers, compressors, and gas reservoirs. The height of the **fluidized bed** is one tenth to one half that of vertical **fluidized bed** reactors and the app. is designed to produce polymers from .alpha.-olefins, polar vinyl monomers, dienes, acetylenes, and aldehydes in gas mixts. Each **fluidizing** zone can operate with a sep. gas feed mixt. and temp. and the **bed** is set at an angle that depends on the d. and adherence of the polymer being produced and that allows for wt.-driven flow of polymer particles through each zone. A low-d. copolymer of 1-butene and ethylene was prepd. using a transition metal catalyst, MAO activator, an electron donor, was produced in the reactor using a **fluidized bed** 3-zone configuration. The yield of polymer and productivity increased with the no. of **fluidization** zones.

ST **fluidized bed horizontal** block polymn reactor; gas phase continuous polymn reactor; ethylene butene polymn **fluidized bed** transition metal catalyst

IT Aluminoxanes

RL: CAT (Catalyst use); USES (Uses)

(Me; variable zone **fluidized bed horizontal** reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT Reactors

(**fluidized-bed**; variable zone **fluidized bed horizontal** reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT **Fluidized** beds

(reactors; variable zone **fluidized bed horizontal** reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT Heat exchangers

Polymerization apparatus

(variable zone **fluidized bed horizontal** reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT Transition metals, uses

RL: CAT (Catalyst use); USES (Uses)

(variable zone **fluidized bed horizontal** reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

IT 9010-79-1P, Ethylene-propylene copolymer 25087-34-7P, 1-Butene-ethylene copolymer

RL: IMF (Industrial manufacture); PREP (Preparation)

(variable zone **fluidized bed horizontal** reactor for continuous gas phase polymn. of olefins and vinyl monomers with high-yield catalysts)

L13 ANSWER 2 OF 3 CA COPYRIGHT 2002 ACS

TI Modeling of linear **expansion zone** of a **horizontal** gas jet in **fluidized bed** of large particles

AB A math. model based on the general equations of mass and momentum conservation was developed to describe the flow properties of a gas jet introduced **horizontally** into a **fluidized bed** with coarse particles. The effects of the main phys. and operating parameters on the jet development, as well as on the entrainment of solid particles and the formation of local reduced-pressure areas, were easily detd. by computer processing of data. Good agreement between exptl. data and model predictions was found.

L13 ANSWER 3 OF 3 CA COPYRIGHT 2002 ACS

AB A device is presented for holding filtration, ion exchange, or other solid

materials through which **fluids** are to be passed. The device consists of a rigid casing contg. a flexible casing in which the filter material is placed. The top and bottom of the flexible casing is enclosed

by a pervious material to permit **fluid** flow and the inner flexible casing is sealed at the top and bottom to the outer rigid casing to provide a space between the containers into which liquids or gases under pressure may be admitted to apply a **horizontal** pressure to the filter material. This **horizontal** pressure may be adjusted to prevent channel formation or **bed** disruption during regenerative back-wash or to permit lateral expansion of the filter media as a result of swelling. A variable chamber vol. in the inner flexible casing may be used to allow for vertical expansion of the filter media. In an application of the app. to the softening of water by a cation-exchange resin, a total **bed** vol. of 420 l. was placed in a 1100-mm. layer in the flexible casing allowing an upper expansion height

of 900 mm. The top and bottom of the flexible casing were closed with plastic disks contg. 4 mm. holes permitting passage of the water but preventing passage of the exchange resin. Water being softened was passed

through in a downward direction. For regeneration of the spent exchanger,

the flexible wall of the inner casing was compressed such that the **expansion space** was completely eliminated and NaCl soln. followed by tap water was passed through the **bed** in an upward direction. The casing was then expanded, the filter again rinsed in a downward direction and the exchanger was ready for use. A significant decrease in the amt. of regenerant soln. is claimed relative to that used when regenerant soln. is passed through in a downward direction.

=>

=> d 84 19 all

L9 ANSWER 84 OF 150 CA COPYRIGHT 2002 ACS  
AN 94:158912 CA  
TI Dispersed material segregation in a fluidized bed  
AU Gel'perin, N. I.; Ainshtein, V. G.; Zakharenko, V. V.; Gordonov, B. S.  
CS USSR  
SO Khim. Prom-st. (Moscow) (1980), (11), 686-9  
CODEN: KPRMAW; ISSN: 0023-110X  
DT Journal  
LA Russian  
CC 48-7 (Unit Operations and Processes)  
AB Segregation of a dispersed material in a **fluidized bed**  
was studied with various mixts. of quartz sand in a lab. column. With  
increasing **air** velocity, the segregation rate increased but its  
efficiency **decreased**. Placing **horizontal** sieves in  
the column limited formation and growth of **gas** bubbles and  
mixing of solid particles. With increasing **bed** height,  
segregation **decreased**. The optimum results were obtained with  
sieves having a mesh size 1.2 mm and a fraction 0.334 mm diam.  
ST segregation fluidized bed  
IT Segregation  
(in fluidization)  
IT Fluidization  
(segregation in)

=>

=> d 117 19 all

L9 ANSWER 117 OF 150 CA COPYRIGHT 2002 ACS

AN 70:79505 CA

TI Mixing of solid in gas-solid fluidized beds

AU Pippel, Winfried; Runge, Klaus; Geyer, Horst; Lehmann, Walter; Mueller, Fritz

CS Tech. Univ. Dresden, Dresden, Ger.

SO Chem. Tech. (Berlin) (1968), 20(12), 750-5

CODEN: CHTEAA

DT Journal

LA German

CC 48 (Unit Operations and Processes)

AB A demonstration is attempted to show how, in **gas-solid fluidized** beds, the mixing and residence time behavior of a solid can be detd. by simple charge expts. in lab. app. and how the interpretation and operation of industrial equipment can be optimized. Mixing must be detd. in vertical, **horizontal**, longitudinal, an transversal direction. By using only small layer heights, vertical

mixing

can be assumed as complete, and the investigations are limited to this condition. In the velocity ranges studied, it was assumed that longitudinal mixing of the solid substance is effected essentially by a process similar to diffusion, neglecting other influences. A radioactive tracer ( $^{24}\text{NaCl}$ ) was introduced into the **fluidized** layer at a detd. location. After a certain time, the local distribution was measured, and a mixing coeff. was calcd. to characterize longitudinal mixing of the solid substance. The solid substances were  $(\text{NH}_4)_2\text{SO}_4$

(grain

size 0.1-1.25 mm.) or sand (grain size 0.2-0.5 mm.) in layers up to 35

cm.

in height, **fluidized** with **air**. The tracer was added as a neutral soln. immediately before each test by means of an atomizer, followed by drying. The desired **air** flow velocity was adjusted and the time was measured from the beginning of uniform **fluidization** to breakdown of the layer upon shutting off the **air** stream. Continuous measurements were made with scintillation counters. Samples (1 cm.<sup>3</sup> vol.) were extd. from the smaller app. and larger samples of 1 kg. from a larger-size app. The counting rate is const. in the transversal direction, though with statistical

fluctuations.

The measured longitudinal values can be approximated by a linear function.

The counting rate comprises an error by statistical radioactive decay, different **bed** height, and a geometrical factor detd. by inactive filling solid. The relative mixing coeff. error was 10-20%. A

dependence

of the mixing coeff. of either  $(\text{NH}_4)_2\text{SO}_4$  or sand could not be found, nor

a

dependence on the location of the tracer on mixing characteristics.

There

is a dependence on **fluidizing** velocities. At low velocities, mixing is low and increases linearly above a certain threshold velocity. The mixing coeff. increases as a linear function of the layer height. Incorporation of transversal sheet-metal separators markedly **decreases** the longitudinal mixing coeff. Formulas are given for calcg. the optimal operation parameters for mixing coeffs., and mass and

heat transfer.  
ST mixing gas solids fluidized beds; fluidized beds gas solids mixing  
IT Isotopes  
RL: USES (Uses)  
(as indicators, of mixing of solids in fluidized bed)  
IT Mixing  
(of solids in fluidized bed)  
IT Fluidized beds  
(solids mixing in)  
IT 13982-04-2, uses and miscellaneous  
RL: USES (Uses)  
(as indicator, of mixing of solids in fluidized bed)

=>



> d 1-44 115 ti

L15 ANSWER 1 OF 44 USPATFULL

TI Cooled tubes arranged to form impact type particle separators

L15 ANSWER 2 OF 44 USPATFULL

TI Producing liquid iron having a low sulfur content

L15 ANSWER 3 OF 44 USPATFULL

TI Method for preparing pre-coated aluminum-alloy components and components prepared thereby

L15 ANSWER 4 OF 44 USPATFULL

TI Method of providing fuel for an iron making process

L15 ANSWER 5 OF 44 USPATFULL

TI FCC apparatus with enclosed vented riser

L15 ANSWER 6 OF 44 USPATFULL

TI Method of processing waste material containing non ferrous metal oxides

L15 ANSWER 7 OF 44 USPATFULL

TI Apparatus and process for cooking potatoes

L15 ANSWER 8 OF 44 USPATFULL

TI Method of providing fuel for an iron making process

L15 ANSWER 9 OF 44 USPATFULL

TI FCC process with enclosed vented riser

L15 ANSWER 10 OF 44 USPATFULL

TI FCC process with enclosed vented riser

L15 ANSWER 11 OF 44 USPATFULL

TI Method of using rubber tires in an iron making process

L15 ANSWER 12 OF 44 USPATFULL

TI Method of providing fuel for an iron making process

L15 ANSWER 13 OF 44 USPATFULL

TI Method of processing electric arc furnace dust and providing fuel for an iron making process

L15 ANSWER 14 OF 44 USPATFULL

TI Low slag iron making process with injecting coolant

L15 ANSWER 15 OF 44 USPATFULL

TI Very low slag iron making process

L15 ANSWER 16 OF 44 USPATFULL

TI Method of disposing of environmentally undesirable material and providing fuel for an iron making process e.g. petroleum coke

L15 ANSWER 17 OF 44 USPATFULL

TI Cyclonic mixing and combustion chamber for circulating fluidized bed boilers

L15 ANSWER 18 OF 44 USPATFULL  
TI Air mattress

L15 ANSWER 19 OF 44 USPATFULL  
TI Method and apparatus for measuring and controlling the volumetric weight of an expanded particulate material

L15 ANSWER 20 OF 44 USPATFULL  
TI Air mattress with audible pressure relief valve

L15 ANSWER 21 OF 44 USPATFULL  
TI Process for preparing a coated-particle salt substitute composition

L15 ANSWER 22 OF 44 USPATFULL  
TI Encapsulated yeast

L15 ANSWER 23 OF 44 USPATFULL  
TI Fluidized bed heat generator and method of operation

L15 ANSWER 24 OF 44 USPATFULL  
TI Steam generator and method of operating a steam generator utilizing separate fluid and combined gas flow circuits

L15 ANSWER 25 OF 44 USPATFULL  
TI Air mattress with pressure relief valve

L15 ANSWER 26 OF 44 USPATFULL  
TI Fluidized bed apparatus

L15 ANSWER 27 OF 44 USPATFULL  
TI Fluidized bed reactor

L15 ANSWER 28 OF 44 USPATFULL  
TI Upflow packed bed catalytic reactor with periodic bed expansion

L15 ANSWER 29 OF 44 USPATFULL  
TI Water filtration process and apparatus having upflow filter with buoyant filter media and downflow filter with nonbuoyant filter media

L15 ANSWER 30 OF 44 USPATFULL  
TI Process of preparing a particulate food acidulant

L15 ANSWER 31 OF 44 USPATFULL  
TI Particulate food acidulant

L15 ANSWER 32 OF 44 USPATFULL  
TI Self-contained fire protection apparatus

L15 ANSWER 33 OF 44 USPATFULL  
TI Fluidized bed reactor apparatus and related gasification system

L15 ANSWER 34 OF 44 USPATFULL  
TI Fluidized bed apparatus

L15 ANSWER 35 OF 44 USPATFULL

TI      Circulating fluidized bed boiler

L15    ANSWER 36 OF 44    USPATFULL  
TI      Electric heat storage apparatus

L15    ANSWER 37 OF 44    USPATFULL  
TI      Process for stripping oil from fluidized ash and char particles to  
         prepare the particles for decarbonization

L15    ANSWER 38 OF 44    USPATFULL  
TI      Fluid bed combustion method and apparatus

L15    ANSWER 39 OF 44    USPATFULL  
TI      Vessel for stripping oil from fluidized ash and char particles

L15    ANSWER 40 OF 44    USPATFULL  
TI      Treating carbonaceous matter with hot steam

L15    ANSWER 41 OF 44    USPATFULL  
TI      Elevating and conveying system for unloading vessels or the like

L15    ANSWER 42 OF 44    USPATFULL  
TI      Purification filter for liquids

L15    ANSWER 43 OF 44    USPATFULL  
TI      FLUID-OPERATED MACHINE TOOL WITH MEANS FOR EFFECTING UNIFORM EXPANSION  
         OF ITS FRAME IN RESPONSE TO HEATING BY OPERATING FLUID

L15    ANSWER 44 OF 44    USPATFULL  
TI      METHOD AND APPARATUS FOR FLUID CATALYTIC CRACKING

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> d 1-31 118 ti

L18 ANSWER 1 OF 31 USPATFULL

TI Scavenger energy converter system its new applications and its control systems

L18 ANSWER 2 OF 31 USPATFULL

TI Method for treating combustibles by slagging combustion

L18 ANSWER 3 OF 31 USPATFULL

TI Process for the continuous manufacture of steel

L18 ANSWER 4 OF 31 USPATFULL

TI Method and apparatus for separating resource materials from solid waste

L18 ANSWER 5 OF 31 USPATFULL

TI Method for dosing a particulate phase in a gas/particle flow in a fluidized bed

L18 ANSWER 6 OF 31 USPATFULL

TI Method of and device for directly reducing fine-particle ores and concentrates thereof

L18 ANSWER 7 OF 31 USPATFULL

TI Apparatus and method for dosing

L18 ANSWER 8 OF 31 USPATFULL

TI Direct coal fired turbine combined power generation system

L18 ANSWER 9 OF 31 USPATFULL

TI Apparatus and method for dosing a particulate phase present in a gas/particle flow from a fluidized bed

L18 ANSWER 10 OF 31 USPATFULL

TI Fluidized bed selective pyrolysis of coal

L18 ANSWER 11 OF 31 USPATFULL

TI Method for drying sludge

L18 ANSWER 12 OF 31 USPATFULL

TI Process for gas phase polymerization of olefins in a fluidized bed reactor

L18 ANSWER 13 OF 31 USPATFULL

TI Fines recirculating fluid bed combustor method and apparatus

L18 ANSWER 14 OF 31 USPATFULL

TI Zone heating for fluidized bed silane pyrolysis

L18 ANSWER 15 OF 31 USPATFULL

TI Composite zeolitic magnetic material

L18 ANSWER 16 OF 31 USPATFULL

TI Method of making agglomerated cellulosic particles using a substantially horizontal rotating drum

L18 ANSWER 17 OF 31 USPATFULL

TI Fine particulate feed system for fluidized bed furnace

L18 ANSWER 18 OF 31 USPATFULL  
 TI Process for operating a magnetically stabilized fluidized bed

L18 ANSWER 19 OF 31 USPATFULL  
 TI Hydrocarbon conversion process utilizing a magnetic field in a fluidized bed of catalytic particles

L18 ANSWER 20 OF 31 USPATFULL  
 TI Preparation of imidazoles

L18 ANSWER 21 OF 31 USPATFULL  
 TI Dusting apparatus

L18 ANSWER 22 OF 31 USPATFULL  
 TI Process for the removal of particulates entrained in a fluid using a magnetically stabilized fluidized bed

L18 ANSWER 23 OF 31 USPATFULL  
 TI Apparatus for the thermal conversion of gypsum

L18 ANSWER 24 OF 31 USPATFULL  
 TI Method of thermally splitting hydrate of aluminum chloride

L18 ANSWER 25 OF 31 USPATFULL  
 TI Hydrocarbon conversion process utilizing a magnetic field in a fluidized bed of catalytic particles

L18 ANSWER 26 OF 31 USPATFULL  
 TI Process for operating a magnetically stabilized fluidized bed

L18 ANSWER 27 OF 31 USPATFULL  
 TI Filter material charging apparatus for filter assembly for radioactive contaminants

L18 ANSWER 28 OF 31 USPATFULL  
 TI Recovery of solid selectively constituted high purity aluminum chloride from hot gaseous effluent

L18 ANSWER 29 OF 31 USPATFULL  
 TI Method of removing HF from gases

L18 ANSWER 30 OF 31 USPATFULL  
 TI EFFLUENT FILTERING PROCESS AND APPARATUS FOR ALUMINUM REDUCTION CELL

L18 ANSWER 31 OF 31 USPATFULL  
 TI DIRECT OXIDATIVE CONVERSION OF SODIUM SULFIDE TO SODIUM SULFITE BY ABSORBING THE HEAT OF REACTION IN A FLUIDIZED BED SYSTEM USING ADIABATIC COOLING

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> s fluid?(p)bed and l7 and l12 and l19
    603501 FLUID?
    145654 BED
    44472 FLUID?(P)BED
1796671 REDUC####
    818181 DECREAS###
    849121 AIR
    755758 GAS?
    406656 (REDUC#### OR DECREAS###) (P) (AIR OR GAS?)
    247902 EXPANSION
    285909 ZONE#
    1309820 AREA#
    1996090 PORTION#
    1417559 SPACE#
    9793 EXPANSION(3W) (ZONE# OR AREA# OR PORTION# OR SPACE#)
L22      2 FLUID?(P)BED AND L7 AND L12 AND L19

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=> d 1-2 l22 ti

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L22 ANSWER 1 OF 2  USPATFULL
TI   Granular bed filter device including a regenerative granular bed
      cleaning apparatus

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L22 ANSWER 2 OF 2  USPATFULL
TI   PROCESS AND APPARATUS FOR PREHEATING POWDER

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